1. Introduction

The City of Hollister (City) retained HydroScience Engineers, Inc. to develop a Long-Term Wastewater Management Program (LTWMP) for reliably treating and discharging the City's domestic and industrial wastewater. As part of this LTWMP, it is the City's goal to maximize the reuse of treated effluent. Pursuant to the California Regional Water Quality Control Board Revised WDR Order No. 00-020 (**Appendix A**) and RWQCB (Central Coast Region) Cease and Desist Order R3-2002-0105 (**Appendix B**) as amended by Order No. R3-2005-0142 (**Appendix C**), the LTWMP must address current wastewater flows as well as future buildout flows and must be implemented by December 31, 2007. This report presents the City's LTWMP and is organized into the following sections:

- Section 1 – Introduction
- Section 2 – Existing Domestic WWTP
- Section 3 – Existing Industrial WWTP
- Section 4 - Wastewater Flows
- Section 5 - Regulatory Requirements
- Section 6 - Wastewater Treatment
- Section 7 - Effluent Management
- Section 8 - Water Balance
- Section 9 - Recommended LTWMP

1.1. Background

The City of Hollister is located in the central coastal region of California at the junction of the San Juan and Hollister Valleys. The City is located in northern San Benito County at the intersection of State Routes 25 and 156, approximately 90 miles south of San Francisco, as shown in **Figure 1-1**.

The City owns and operates two wastewater treatment facilities (Error! Reference source not found.). The first facility is the Industrial Wastewater Treatment Plant (IWTP) for treating seasonal industrial wastewater. The IWTP is located west of downtown Hollister at the west end of South Street and on the north side of the San Benito River. Built in 1971, the IWTP served two canneries until 1992, when one of the canneries discontinued operation. San Benito Foods is currently the only remaining industrial discharger to the IWTP and discharges tomato cannery wastewater from mid-June through mid-October.

In addition to the IWTP, the City also owns and operates a second treatment facility, the Domestic Wastewater Treatment Plant (DWTP), located less than a mile to the west of the IWTP and south of the San Benito River. The DWTP was built in 1979 and treats the City's domestic wastewater, consisting predominantly of residential and commercial customers within the City's service area. The City is responsible for operation, maintenance, monitoring, and reporting for the DWTP and the IWTP.

Since becoming operational, the IWTP has generally complied with the conditions of Waste Discharge Requirement (WDR) Order 90-90, which was issued by the RWQCB in 1990, and is included as **Appendix D**, but at times levels of total dissolved solids (TDS), sodium (Na), and chloride (Cl) are high. The IWTP has experienced elevated levels of TDS, Na, and Cl during canning season discharges, which has resulted in exceedances of the limits in the IWTP's WDR permit for these parameters.

Like the IWTP, the DWTP has also generally complied with the conditions of its WDR Order 87-47, which was issued by the RWQCB in 1987, and is included as **Appendix E**. Beginning in 1993, however, the DWTP began experiencing diminishing capacity through its percolation beds – the sole method of effluent disposal for the DWTP's treated wastewater.

Elevated levels of effluent suspended solids (SS) were suspected of causing the diminished percolation capacity (Dickson et al., 1998) by reducing the pore spaces and consequently restricting flow of treated effluent into the soil matrix. In particular, high algae concentrations in the DWTP effluent appeared to exacerbate the condition since algae are typically larger and less susceptible to removal by gravity settling in the treatment ponds. Numerous measures have been explored to improve the percolation rates, including regular draining, periodic disking of the percolation bed surface, and removal of soil at the bottom of the beds. These measures have generally provided only short-term and limited improvement of percolation capacity.

Over time, the capacity of the DWTP's percolation beds diminished to the point where the ability of the DWTP to adequately and reliably dispose of all domestic wastewater flows became compromised. Consequently, the City explored emergency diversion of domestic wastewater for treatment and disposal to the IWTP, which had surplus treatment and disposal capacity available. It is estimated that up to 7.5 million gallons per day (MGD) of treatment and disposal capacity is available at the IWTP, on a seasonal basis. In November 1998, the City requested approval to divert domestic wastewater flow to the IWTP. The RWQCB granted the City's request and subsequently adopted Order 00-020 in May 20, 2000, allowing temporary diversion of domestic wastewater to the IWTP. A copy of Order 00-020 is included as **Appendix A**.

The extent of the diversion capacity is summarized in **Table 1-1**.

Table 1-1: Summary of Average Monthly Flow (MGD) Limits for the DWTP and IWTP

Flow Type	DWTP	IWTP (Canning Season) [a]	IWTP (Non-Canning Season) [a]
Municipal	2.69	0.18	1.52
Cannery	-	3.50	-
Storm water	-	-	0.20

[a] The canning season runs approximately mid-June through mid-October, and varies from year to year.

During mid-2001 and early 2002, discharges at the IWTP and DWTP resulted in a violation of each facility's WDRs. From June 1, 2001, to March 31, 2002, it is estimated that 6,100 gallons of treated undisinfected wastewater seeped into the inactive San Benito River channel from Percolation Bed 13 of the DWTP. On May 6, 2002, the levee of IWTP Pond 6 was breached, discharging an estimated 15 MG of treated undisinfected domestic wastewater to the San Benito River channel. In addition, the RWQCB staff became concerned that plant influent flow measurements may not have been accurate. The RWQCB issued Cease and Desist Order No. R3-2002-0105, included in **Appendix B**, on October 17, 2002, listing interim milestones for improving performance of the DWTP, including:

- By November 2002 (subsequently revised to March 3, 2003), the City must award a contract for construction and installation of equipment to reduce total suspended solids (TSS) concentrations in treated effluents discharged to the percolation beds of the DWTP.
- By July 2003 (subsequently revised to August 1, 2003), the City must complete construction and initiate use of a new treatment plant headworks at the DWTP to accurately measure influent flow and prevent the emission of nuisance odors at the headworks.

In addition, Cease and Desist Order No. R3-2002-0105 included a compliance schedule for the City to implement the LTWMP. Some conditions of the order are listed below:

- Domestic wastewater could be diverted on a temporary basis until additional capacity could be added to the DWTP.
- Discharge or diversion of domestic wastewater to the IWTP was prohibited after June 30, 2005.
- A five-year time schedule for development and implementation of the LTWMP was required.
- By May 20, 2002, the City was required to submit a fully developed LTWMP to the RWQCB outlining how that implementation schedule was to be met.
- The City was required to fully implement the LTWMP by May 20, 2005.

On November 1, 2002 the RWQCB adopted Administrative Civil Liability (ACL) Order R3-2002-0097 in response to the release of wastewater from the IWTP to the San Benito River. The ACL assessed the City a civil liability of $1.2M, but suspended $1.176M of the assessment if the City successfully completed certain interim compliance projects. An additional $200,000 of the civil liability would be further suspended upon successful implementation of the LTWMP ***by October 15, 2005***.

The City initiated interim improvements at the DWTP to provide short-term treatment and discharge improvements until the LTWMP could be implemented. Specific objectives for these interim improvements included improving effluent quality, odor control, and flow measurement. These interim improvements introduced considerable changes to the treatment process by converting the original primary pond/advanced integrated pond system (AIPS) into a dual-powered, multicellular (DPMC) process for improved biochemical oxygen demand (BOD) reduction and TSS control.

In addition to the secondary process changes, there were added improvements upstream of the DPMC pond system. To control odors and improve flow measurement, a new influent lift station was constructed and was equipped with a mechanical grinder, an odor control biofilter, and magnetic flow meter. The interim improvement facilities were placed into service in July 2003. To the greatest extent possible, the interim improvements were designed to be incorporated into the LTWMP.

The City submitted an Administrative Draft of the LTWMP to the RWQCB in May 2002, and a Draft in September 2002. The draft report proposed an expanded long-term DPMC pond system with a polishing wetland as the LTWMP. The draft report also presented a higher water quality alternative that would utilize an immersed membrane bioreactor (MBR) system, but at a significantly higher project cost. Comments received from the RWQCB (November 14, 2002) suggested that any new wastewater treatment plant (WWTP) would have to comply with the most stringent nitrate limit as established in the local groundwater basin plan. This was specified in a subsequent letter from the RWQCB (**Appendix F**) as a nitrate (NO_3) limit of 5 milligrams/Liter (mg/L) as Nitrogen. The ability of the proposed wetlands polishing system to consistently meet such a low nitrate limit was unknown. In addition, because the proposed constructed wetlands would eventually overflow to the San Benito River, the RWQCB affirmed the need for a National Pollutant Discharge Elimination System (NPDES) permit for discharge to waters of the U.S. The City and local stakeholders concluded that the NPDES permitting process would be lengthy and potentially controversial. Additionally, preservation of water for beneficial use within the community was identified as an important issue for the community and the wetlands project would essentially export this water resource out of the community. As a result, the City selected the MBR alternative as the best approach to treat its wastewater to meet the strict nitrate limit. The City also elected to abandon the wetlands disposal approach and develop discharge alternatives that don't require an NPDES permit.

S:\common\projects\Hollister\LTWMP\Report\LTWMP 2005\LTWMP December 2005\Figures\Section 1 Figures\Fig 1-1 Site and Vivinity Map.ai

HydroScience Engineers, Inc.

SOURCE: Streets & Trips, 2004

Figure 1-1
City of Hollister Long-Term Wastewater Management Program
Site and Vicinity Map

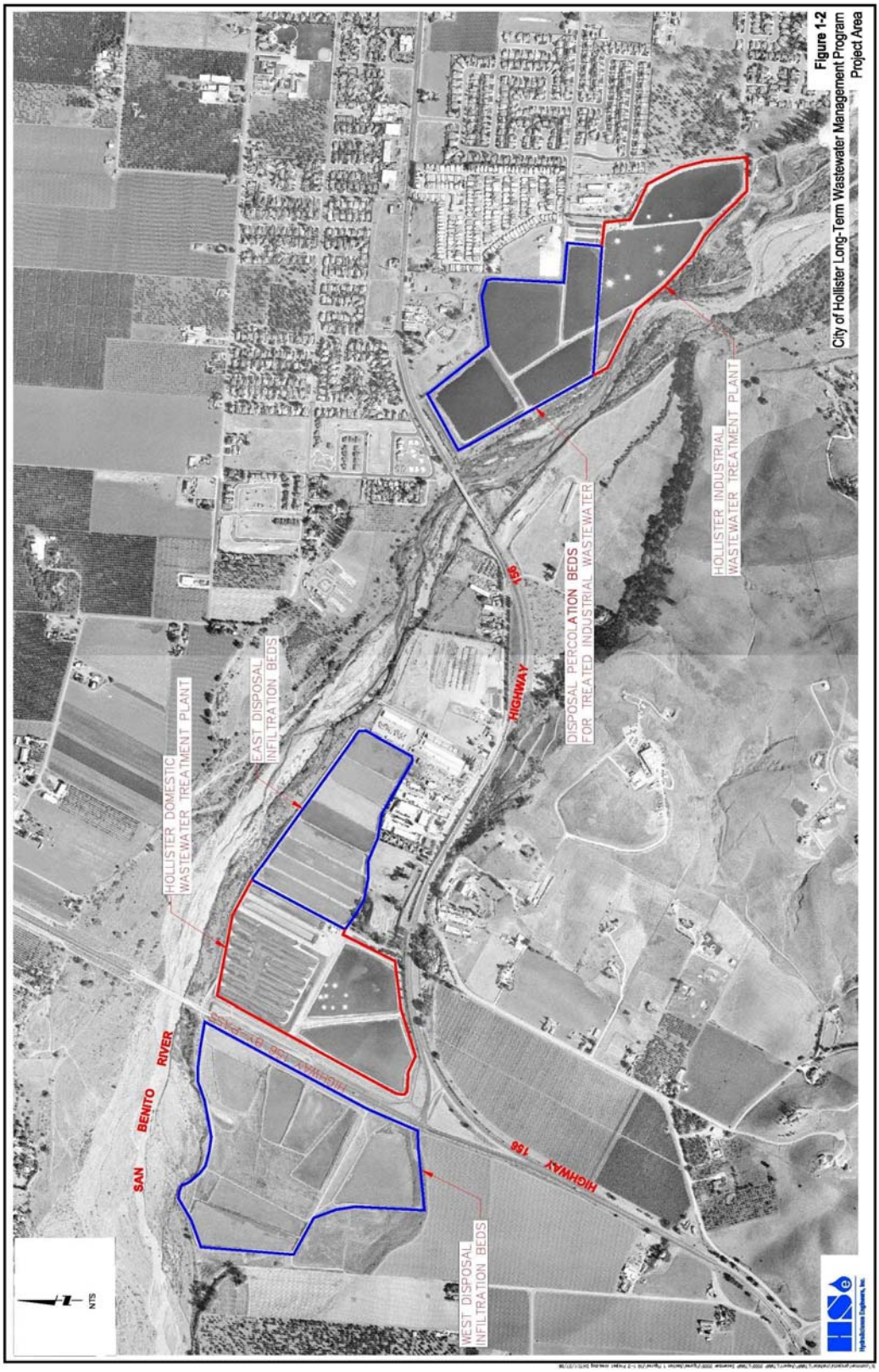
Figure 1-2
City of Hollister Long-Term Wastewater Management Program
Project Area
HOLLISTER DOMESTIC WASTEWATER TREATMENT PLANT
EAST DISPOSAL INFILTRATION BEDS
DISPOSAL PERCOLATION BEDS FOR TREATED INDUSTRIAL WASTEWATER
HOLLISTER INDUSTRIAL WASTEWATER TREATMENT PLANT
WEST DISPOSAL INFILTRATION BEDS
SAN BENITO RIVER
HIGHWAY 156
NTS

The City of Hollister is a member of the Water Resources Association (WRA) of San Benito County. The WRA was formed by the City of Hollister, the City of San Juan Bautista, San Benito County Water District (SBCWD), and the Sunnyslope County Water District. The WRA updated its 1998 Groundwater Management Plan (GMP) and prepared a program environmental impact report (PEIR) to facilitate implementation of a variety of groundwater management projects and programs (WRA, 2004). The LTWMP must evaluate discharge options and capacities as well as treatment alternatives within the framework of the WRA's GMP.

Within the Hollister Urban Area dual water supplies and distribution systems shall be required for all new development and for new parks, school grounds, cemeteries and other large landscaped areas. Every reasonable effort shall be made to provide existing park, school grounds, cemeteries and other large landscape areas with water supplies separate from the domestic water system.

In December 2004, the City of Hollister, San Benito County and San Benito County Water District (SBCWD) signed a Memorandum of Understanding, Hollister Urban Area Water and Wastewater Master Plan (MOU). The LTWMP is based on the principles set forth in the MOU. These principles include:

- The Hollister Domestic Wastewater Treatment Plant is the primary wastewater treatment plant for the Hollister Urban Area including areas in the County that are designated to be served by that facility.
- Standards for the quality of wastewater to be discharged shall be developed and agreed to by the City of Hollister, San Benito County and the San Benito County Water District and shall include appropriate consideration of regional issues. These standards shall be the most stringent of local standards, state regulations or federal regulations and shall include careful consideration of anticipated future regulation.
- Wastewater treatment processes and disposal methods shall include careful consideration of future wastewater disposal requirement, shall provide for maximum reuse of wastewater, and shall be agreed to by the City of Hollister, San Benito County and the San Benito County Water District.
- Disposal options and sites shall not:
    - Impact drinking water supplies or negatively impact adjacent land uses or values unless fully mitigated to the satisfaction of the City of Hollister, San Benito County and the San Benito County Water District.
    - Be inconsistent with applicable General Plans or Policies including preservation of agricultural land.
    - Be or result in conditions inconsistent with the quantity, quality or groundwater levels objectives of groundwater management plans for the area of disposal.
- Water and wastewater management shall protect and sustain the local surface and groundwater supplies of San Benito County.
- Drinking water shall have a TDS concentration of not greater than 500 mg/l and a hardness of not greater than 120 mg/l
- Recycled wastewater shall have a target TDS of 500 mg/l and shall not exceed 700 mg/l. This objective shall first be met by rigorous source control and second by demineralization. Blending recycled water with San Felipe water shall only be used as an interim measure to meet these water quality objectives. These objectives shall be met by the measures identified above and the reduction of TDS concentrations in drinking water as soon as practical and not later than 2015.
- Within the Hollister Urban Area all wastewater shall be treated at a central wastewater treatment plant and City and County general plans and supporting public service plans

and implementing Ordinances/Regulations shall be consistent with that requirement. This provision shall not preclude wastewater satellite treatment plants for the recovery of water for local recycling.

The MOU establishes the policy guidelines for completion of an Urban Area water and Wastewater Master Plan that fully integrates water and wastewater resource management, in terms of quality, quantity, and groundwater level and coordinates resource management with City and County General Plans. This Master Plan is scheduled for completion in January 2007. The Master Plan will incorporate integrated work plans for implementation of the Regional Recycled Water Facility Plan and for implementation of quality improvements for both potable water and wastewater to allow for reuse of high quality wastewater effluent without the need for blending.

The City, San Benito County Water District, and San Benito County collaborated in an effort to evaluate alternative strategies for long-term management of effluent from the City's new DWTP. Alternative effluent management strategies evaluated by the agencies included:

- Percolation
- Spray fields
- Wetlands
- Seasonal Storage
- Infiltration Gallery
- Deep Ground Injection
- Export to Water Poor Areas
- Pajaro Pipeline
- Recycled Water
- Ocean Outfall
- Evaporation Ponds

The agencies recommended a long-term wastewater effluent management strategy of 100% Title 22 recycling of wastewater. Until such time as the 100% reclamation alternative can be implemented the agencies recommended interim use of spray fields for effluent disposal. Both the long-term reclamation strategy and interim spray field strategy will require construction of a seasonal wastewater storage reservoir to store water during the wet season when the recycled water can not be applied to spray fields used for recycled water irrigation purposes.

On July 21, 2005 the City requested an extension of the compliance schedule for implementation of the LTWMP. The RWQCB adopted Order No. R3-2005-0142 (**Appendix C**) amending WDR Order No. 00-020, CDO Order R3-2002-0105, and ACL Order R3-2002-0097 to extend the compliance schedule for the LTWMP. This order included the following the following revisions to the LTWMP compliance requirements:

- The LTWMP is to be completely implemented by December 31, 2007.
- The City can continue diversions of domestic wastewater to the IWTP until December 31, 2007.
- The City shall submit an updated LTWMP to the RWQCB for review by December 31, 2005.

1.2. Objectives

This report develops a LTWMP for the City's DWTP and IWTP to meet current and future treatment and discharge requirements. Specific objectives of this study are to:

- Define the City's ultimate goals for wastewater handling consistent with prevailing regional practices and interests,
- Develop preliminary WWTP improvements, implementable by December 31, 2007, that are consistent with the RWQCB's requirement for a long-term wastewater management program, and
- Develop a wastewater effluent management strategy, implementable by December 31, 2007, that is consistent with the RWQCB's requirement for a long-term wastewater management program.

1.2.1. City Planning Criteria

The City Council has defined planning criteria consisting of five requirements for the LTWMP. Treatment and discharge alternatives were evaluated for consistency with the City's planning criteria. The planning criteria outline the City's ultimate objectives for flow projections, discharge standards, treatment process selection, costs, and wastewater reuse, and are summarized in **Table 1-2**.

Table 1-2: City of Hollister Planning Criteria for the LTWMP

Planning criteria	Objectives
Flow Projections	→ Based on population and development set forth in the City's General Plan.
	→ Flow projections shall include General Plan build-out and allowances for inflow and infiltration (I/I).
Discharge Standards	→ Shall be the most stringent local, State or Federal standards.
	→ Shall consider anticipated future regulatory change.
	→ Standards shall be developed in consultation with San Benito County and the SBCWD and consider regional issues [1].
Treatment Process	→ Wastewater treatment processes shall have been demonstrated to be effective at treating similar types of wastewater to similar levels of treatment without extraordinary O&M requirements.
Cost	→ Treatment and alternatives shall be evaluated on a life cycle cost basis including initial capital, phased expansion capital, operation, maintenance, and repair/replacement costs through buildout.
Wastewater Reuse	→ Maximize beneficial reuse recognizing that this may be dependent upon improving the quality of the source water.

Notes:
1. MOU Hollister Urban Area Water and Wastewater Master Plan, 2004.

1.2.2. Regional Planning Criteria

County or regional interests in the City's wastewater management practices principally focus on two objectives. The first is on maximization of beneficial reuse of treated wastewater. This would include encouraging urban reclamation as well as agricultural irrigation. The second agenda focuses on protection of groundwater quality, with particular attention to TDS and nitrate control. General groundwater impacts

should be consistent with the goals of the Central Coast RWQCB Basin Plan Objectives and the ongoing GMP currently under development.

A Recycled Water Feasibility Study was prepared by San Benito County for the WRA (RMC Water and Environment (RMC), May 2005). The purpose of the feasibility study was to identify a cost effective water-recycling project that would meet the needs of the region. To further define the project continued planning efforts led to the preparation of a Recycled Water Facility Plan (RMC, December 2005). In addition, the City, San Benito County, and San Benito County Water District are jointly preparing a Hollister Urban Area Water and Wastewater Master Plan. The LTWMP will need to be consistent with these regional planning efforts.